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ART UNIT	PAPER NUMBER
1753	#11

DATE MAILED: 01/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/498,375	Ito et al.
Examiner	**Art Unit**
Rodney McDonald	1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Oct 30, 2002*.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-30, 33-42, and 73* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☒ Claim(s) *23-30 and 33-42* is/are allowed.

6) ☒ Claim(s) *1-22 and 73* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☒ All b) ☐ Some* c) ☐ None of:

1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Information Disclosure Statement

1. The Information Disclosure Statement is missing from the file. It is requested that the Applicant provide a copy for consideration in the next action.

Drawings

2. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 10-30-02 have been approved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was

made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka et al. (Japan 55-143036) in view of Itano (Japan 1-298162).

Kataoka et al. teach a holding part 11 for holding a wafer 20 shaped as a recess. A suction hole 13, which is connected to a vacuum pump, a plurality of annular grooves 14 surrounding the suction hole 13 and a plurality of radial grooves 15 are provided in the bottom of the holding part 11 so that the suction hole, the annular grooves and the radial grooves are connected to one another. An annular fitting groove 16 is provided on the top of the wall of the holding part 11 and filled with a sealing polyester resin material 17. A gas-permeable metal disc 18, whose surface 18 is made rough and which is made of a porous sintered metal or the like, is fitted in the recess of the holding part 11. A wafer 20 to be sucked is placed on the metal disc 18 and the sealing material 17. As a result, dusts are sucked into the recesses of the rough surface 18a so that the dusts are prevented from adhering to the wafer 20. (See Abstract)

In Figure 4 the contact holding surface is planar with a top surface of the substrate holder. (See Figure 4)

The roughness can be 0-40 microns. (Column 5)

The differences between Kataoka et al. and the present claims is that the substrate being an optical disk is not discussed and deposition is not discussed.

Itano teach a sputter jig for optical disk, the inside peripheral part of an optical disk 2 is fixed to a substrate holder 1 by means of an inside-peripheral supporting medium 3 and a screw 5. The positioning accuracy of the substrate holder 1 and the inside-peripheral supporting medium is determined by the fit between both. The outside peripheral part of ***the optical disk*** substrate 2 is fixed to the substrate holder 1 by means of an outside-peripheral supporting medium 4 and a screw 6. The positioning accuracy of the substrate holder 1 and the outside-peripheral supporting medium 4 is determined by the fit between pins 7 stuck in the substrate holder 1 and the outside-peripheral supporting medium 4. By using this jig the range of ***film formation*** can be controlled with high precision. (See Abstract)

Figures 1-3 shows a rear surface of the substrate holder contacting at least a portion of the rear surface of the film-formed are of the substrate. (See Figures 1-3)

The motivation for utilizing an optical disk substrate and deposition is that it allows for formation of the optical disk medium. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Kataoka et al. by utilizing an optical disk substrate for deposition as taught by Itano because it allows for formation of the optical disk medium.

5. Claims 2, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka et al. in view of Itano as applied to claims 1, 11 and 12 above, and further in view of Hiyamizu et al. (U.S. Pat. 4,906,011).

The differences not yet discussed is the sintered porous body being made of a material witha hardness lower than the substrate,

Hiyamizu et al. teach a vacuum chuck, which is an accessory device for holding a workpiece which has a suction head made of porous sintered particles of a thermoplastic resin, e.g., a fluorocarbon resin, preferably bonded to the chuck base. The suction head is free from the problem of unreliableness of holding of workpieces without the danger of damaging the workpiece. (See Abstract)

Chucks holds workpieces having a relatively small thickness and made of a non-magnetic recording media, glass plate for photomasks, single crystal wafers of, for example, semiconductor silicon and the like. (Column 1 lines 13-21)

FIG. 1 illustrates a conventional vacuum chuck as partly cut by a perspective view. In FIG. 1, an annular suction head 8 made of a rigid and non-porous plastic resin is provided with grooved channels 9 running concentrically and mounted on and adhesively bonded to the metal-made chuck base 1 of the vacuum chuck. The grooved channels 9 are communicated to the perforations 2 in the chuck base 1 to form vacuum ducts so that the workpiece 7 mounted on the suction head 8 is strongly pressed against the suction head 8 when the vacuum ducts of the vacuum chuck are connected to a vacuum line (not shown in the figure). (Column 2 lines 19-30)

FIG. 2, on the other hand, illustrates a vacuum chuck of the invention as partly cut by a perspective view. As is shown in this figure, the annular suction head 4 is made of a porous body which is prepared by sintering fine particles of a thermoplastic resin and the inner and outer

peripheral surfaces thereof are provided with air-impermeable layers 5,5. The suction head 4 is mounted on and adhesively bonded to the upper surface 6 of a metal-made chuck base 1. (Column 2 lines 31-39)

The suction head 4 made of a porous sintered plastic powder can be prepared according to a known procedure in which a powder of a thermoplastic resin is shaped by molding in a metal mold without heating and then the power compact is heated at an appropriate temperature to effect sintering of the plastic particles. It is important in the invention that the process of sintering is performed under such conditions that open pores are formed to serve as the vacuum ducts. (Column 2 lines 40-48)

Examples of suitable thermoplastic resins include, for example, fluorocarbon resins, polyamide resins, polyethylenes, polystyrenes, polyvinyl chloride resins, polyvinyl alcohols, polycarbonate resins, acrylic resins and the like which can be selected and used without particular limitations depending on the hardness of the workpieces, strength of suction by vacuum, method of machining and so on. These plastic resins can be used either singly or as a blend of two kinds or more according to need. (Column 2 lines 49-58)

The vacuum chuck of the invention can be used in machining of workpieces made of a variety of materials having a hardness equal to or higher than the hardness of the thermoplastic resin forming the suction head including plastics, metals having a relatively low hardness such as aluminum, copper and the like, iron or steel, glass, single crystal wafers of semiconductors such as silicon and gallium arsenide, ceramic materials such as silicon carbide, alumina and the like, and so

on. The workpiece should desirably have a large surface area available for suction and a small thickness but use of an appropriate adapter may facilitate working with a workpiece not so wide in surface area and not so small in thickness by expanding the effective surface area available for suction. (Column 4 lines 14-22)

The motivation for utilizing a contact surface that has a hardness lower than the substrate is that it allows for providing a contact surface that leads to flatness of the substrate. (Column 1 lines 53-62)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a contact surface that has a hardness lower than the substrate as taught by Hiyamizu et al. because it allows for providing a contact surface that leads to flatness of the substrate.

6. Claims 3, 15-22 and 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka et al. in view of Itano and Hiyamizu et al. as applied to claims 1, 2 and 11-14 above, and further in view of Aoyama et al. (U.S. Pat. 5,324,012).

The differences not yet discussed is the substrate holder has a vacuum chuck section for absorbing and fixing said contact holding surface to the substrate with a groove section.

Aoyama et al. teach in Figs. 1 and 2 the construction of a wafer holder according to a first embodiment of the present invention. In the Figures, the wafer vacuum holding surface of a wafer holder WH is formed into a circular shape of a diameter which is slightly smaller than the diameter of a wafer W, and the wafer holding surface is formed with a plurality of annular projections 1

(wafer supporting portions) and annular grooves (vacuum holding grooves) which are concentrically (or helically) arranged radially from the center of the wafer holder WH at a constant pitch in the like manner as rims. (Column 5 lines 43-54)

The annular grooves 2 are respectively formed with channels comprising vacuum holes or suction holes 3 which are arranged radially and the vacuum holes 3 are communicated with a manifold or sleeve-like hole 4 extended radially within the wafer holder WH. The hole 4 is connected to a vacuum source for pressure reducing purposes so that a negative pressure is produced within the space enclosed by the back of the wafer W and the annular grooves 2 and the resulting holding action causes the back of the wafer W to be corrected in conformity with the tops of the plurality of annular projections 1, thereby making the wafer flat. (Column 6 lines 1-12)

The motivation for having a substrate holder with a vacuum chuck section for absorbing and fixing said contact holding surface to the substrate with a groove section is that it allows for holding the wafer flat. (Column 6 line 12)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a vacuum chuck section for absorbing and fixing said contact holding surface to the substrate with a groove section as taught by Aoyama et al. because it allows for holding the wafer flat.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka et al. in view of Itano as applied to claim 1 above, and further in view of Tamura et al. (U.S. Pat. 6,336,991).

The difference not yet discussed is the use of a removal claw.

Tamura et al. teach a pusher 19 for inserting and removing the substrate from a substrate holder. (Column 14 lines 46-50)

The motivation for utilizing a pusher is that it allows for movement of the substrate. (Column 14 lines 46-50)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a removal claw as taught by Tamura et al. because it allows for movement of the substrate.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka et al. in view of Itano as applied to claim 1 above, and further in view of Tateishi et al. (U.S. Pat. 4,675,096).

The differences not yet discussed is the apparatus having a carriage chamber and film formation chamber with controllable pressures is not discussed.

Tateishi et al. teach a continuous sputtering apparatus comprising a main vacuum chamber, one loading station and a plurality of process stations capable of having their pressures controlled separately. The process station includes a sub vacuum chamber capable of being in communication with the main vacuum chamber through an opening and an evacuation port. The

loading station and the process stations are arranged to be spaced with equal angles. Substrate holders are provided to face the stations and are rotated by said equal angle in a time. The substrate holder opens and closes the opening of the sub vacuum chamber to serve as a gate valve. (See Abstract)

The motivation for utilizing a substrate holder in an apparatus with a carriage chamber and film formation chamber with controllable pressures is that it allows for a continuous apparatus that is capable of controlling pressures in the chambers. (Column 1 lines 38-48)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Itano by utilizing a carriage chamber and film formation chamber with controllable pressures as taught by Tateishi et al. because it allows for a continuous apparatus that is capable of controlling pressures in the chambers.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka et al. (Japan 55-143036) in view of Itano (Japan 1-298162) and Ueda et al. (U.S. Pat. 6,391,418).

Kataoka et al. and Itano is discussed above and all is as applies above. (See Itano discussed above)

The difference between Kataoka et al. and Itano and the present claims is that thickness of the substrate is not discussed.

Ueda et al. teach that an optical disc substrate can be 0.3 to 1.5 mm in thickness. (Column 11 lines 35-40)

The motivation for selecting a substrate thickness in this range is that it allows for a substrate that is transparent or opaque. (Column 11 line 26)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a substrate of 0.6 mm in thickness as taught by Ueda et al. because it allows for utilizing a substrate that is transparent or opaque.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka et al. in view of Itano and Ueda et al. as applied to claim 6 above, and further in view of Hiyamizu et al. (U.S. Pat. 4,906,011).

Kataoka et al. and Itano is discussed above and all is as applies above. (See Itano discussed above)

The difference between Kataoka et al. and Itano and the present claims is the contact holding surface being made from a material with a hardness that is lower than the substrate is nto discussed.

Hiyamizu et al. is discussed above and all is as applies above. (See Hiyamizu et al. discussed above)

The motivation for utilizing a contact holding surface being made from a material with a hardness that is lower than the substrate is that it allows for providing a contact surface that leads to flatness of the substrate. (See Hiyamizu et al. discussed above)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a contact holding surface being made from a material with a

hardness that is lower than the substrate as taught by Hiyamizu et al. because it allows for providing a contact surface that leads to flatness of the substrate.

11. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka et al. in view of Itano and Ueda et al. as applied to claim 6 above, and further in view of Aoyama et al. (U.S. Pat. 5,324,012).

Kataoka et al. and Itano is discussed above and all is as applies above. (See Itano discussed above)

The difference between Kataoka et al. and Itano and the present claims is that the substrate holder has a vacuum chuck section for absorbing and fixing said contact holding surface to the substrate with a groove section is not discussed.

Aoyama et al. is discussed above and all is as applies above. (See Aoyama et al. discussed above)

The motivation for having a substrate holder with a vacuum chuck section for absorbing and fixing said contact holding surface to the substrate with a groove section is that it allows for holding the wafer flat. (See Aoyama et al. discussed above)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a substrate holder with a vacuum chuck section for absorbing and fixing said contact holding surface to the substrate with a groove section as taught by Aoyama et al. because it allows for holding the wafer flat.

12. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka et al. in view of Itano and Ueda et al. as applied to claim 6 above, and further in view of Tamura et al. (U.S. Pat. 6,336,991).

Kataoka et al. and Itano is discussed above and all is as applies above. (See Itano discussed above)

The difference between Kataoka et al. and Itano and the present claims is that the use of a removal claw is not discussed.

Tamura et al. is discussed above and all is as applies above. (See Tamura et al. discussed above)

The motivation for utilizing a removal claw is that it allows for movement of the substrate. (See Tamura et al. discussed above)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a removal claw as taught by Tamura et al. because it allows for movement of the substrate.

13. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka et al. in view of Itano and Ueda et al. as applied to claim 6 above, and further in view of Tateishi et al. (U.S. Pat. 4,675,096).

Kataoka et al. and Itano is discussed above and all is as applies above. (See Itano discussed above)

The difference between Kataoka et al. and Itano and the present claims that the use of an apparatus having a carriage chamber and film formation chamber with controllable pressures is not discussed.

Tateishi is discussed above and all is as applies above. (See Tateishi et al. discussed above)

The motivation for utilizing a substrate holder in an apparatus with a carriage chamber and film formation chamber with controllable pressures is that it allows for a continuous apparatus that is capable of controlling pressures in the chambers. (Column 1 lines 38-48)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a carriage chamber and film formation chamber with controllable pressures as taught by Tateishi et al. because it allows for a continuous apparatus that is capable of controlling pressures in the chambers.

Response to Arguments

14. Applicant's arguments filed 10-30-02 have been fully considered but they are not persuasive.

RESPONSE TO THE ARGUEMENTS:

In response to the argument that the references do not teach the contact holding surface to be substantially planar with a top surface of the substrate holder, it is argued that Kataoka et al. teach the contact surface to be planar with a top surface of the substrate holder as seen in Figures 1 and 4. (See Kataoka et al. Figures 1 and 4)

In response to the argument that the references do not teach the entire surface of the substrate holding surface in contact with the rear surface to be rough, the entire substrate holding surface which is the sintered component of the holder contacts the substrate and has a roughness as seen in Figure 6. (See Kataoka et al. discussed above; Kataoka et al. Figure 6)

Allowable Subject Matter

15. Claims 23-30 and 33-42 are allowed.

16. The following is a statement of reasons for the indication of allowable subject matter:

Claims 23-29 are allowable over the prior art of record because the prior art of record does not teach an optical disk substrate film-foramtion apparatus comprising:

a substrate holder which holds thereon an optical disk substrate as an object for film formation; an inner mask whcih masks a specified area on an inner side of said optical disk; and an outer mask whcih masks a specified area on an outer side of said optical disk; wherein said inner mask and said outer mask being used for formin a thin-film on a surface of said optical disk substrate, said substrate holder having, a substrate holding section whcih contacts said optical disk substrate on the rear surface of said optical disk substrate but in a portion where the thin-film has been formed ont eh front surface, wherein said substrate holding section contact said optical disk substrate in the portion extending between a line which is 2 to 10 mm on the outer side of an edge of said inner mask and a line whcih is 0.5 to 5 mm on the inner side of an inner edge of said outer mask.

Claims 30 and 33-42 are allowable over the prior art of record because the prior art of record does not teach an optical disk substrate film-foramtion apparatus used for sputter film formation in which a laminated film is formed by combining any one or two or more of a reflection layer, a recording layer, a protection layer, or a dielectric body layer on a disk substrate in an optical disk manufacture step comprising:

a gas supply section for introduction of gas in the substrate holder side in a limited portion between a substrate setting surface of the substrate holder and a film-formed substrate, and at least a closed space section in the area formed in the substrate holder side because of contact between the substrate and substrate holder, wherein gas is supplied form the gas supply section during a period from a time point when sputter film formation is finished until a time point when a substrate is carried out, and wherein the gas supplied form said gas supply section is also used as vent-gas for an intermediate chamber between atomsphere for inserting a substrate into or carrying out from the optical disk substrate film-formation apparatus and vacuum.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney McDonald whose telephone number is 703-308-3807. The examiner can normally be reached on M-Th from 8 to 5:30. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen, can be reached on (703) 308-3322. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

RM

January 7, 2003

RODNEY G. MCDONALD
PRIMARY EXAMINER